SYMBOLS

MECHANICAL EQUIPMENT TAG

- EQUIPMENT DESIGNATION (SEE ABBREVIATIONS)
- NUMBER DESIGNATION

AIR DISTRIBUTION DEVICE TAG

- DEVICE TYPE (SEE ABBREVIATIONS)
- AIR QUANTITY (CFM)

Ⓣ	THERMOSTAT
→	FORCED AIRFLOW
→	INDUCED AIRFLOW
# (in box)	DEMOLITION PLAN NOTE
# (in circle)	NEW WORK PLAN NOTE

SHEET METAL

- MANUAL AIR BALANCING DAMPER
- REDUCER
- FLEXIBLE DUCT
- ROUND DUCT
- MOTOR OPERATED DAMPER RUSKIN CD–60 OR EQUAL

ABBREVIATIONS

ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AUX	AUXILIARY
BTUH	BRITISH THERMAL UNIT PER HOUR
CFM	CUBIC FEET PER MINUTE
DB	DRY BULB
DN	DOWN
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
ETR	EXISTING TO REMAIN
FSK	FOIL SCRIM KRAFT
HP	HORSEPOWER
HP	HEAT PUMP
Hz	HERTZ
IN	INCHES
KW	KILOWATT
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MIN	MINIMUM
NC	NOISE CRITERIA
NOM	NOMINAL
OA	OUTSIDE AIR
PD	PRESSURE DROP
Ph	PHASE
PTHP	PACKAGED TERMINAL HEAT PUMP
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SEN	SENSIBLE
SG	SUPPLY GRILLE
SP	STATIC PRESSURE (INCHES OF WATER)
TYP	TYPICAL
V	VOLTS
WB	WET BULB TEMPERATURE, DEG. °F
WG	WATER GAUGE

GENERAL NOTES

1. WHERE DUCTWORK, PIPING, OR ANY OTHER MECHANICAL EQUIPMENT IS INSTALLED ABOVE THE CEILING STRUCTURE, SUFFICIENT CLEARANCE SHALL BE PROVIDED BELOW ALL LOW POINTS OF THIS EQUIPMENT FOR THE INSTALLATION OF THE FINISHED CEILING AND ITS STRUCTURE AND ALL CEILING–MOUNTED EQUIPMENT INCLUDING CEILING–MOUNTED MECHANICAL EQUIPMENT, LIGHT FIXTURES, PLUMBING LINES, SPRINKLER HEADS, ETC. CLEARANCES REQUIRED FOR THE INSTALLATION OF THIS CEILING–MOUNTED EQUIPMENT SHALL BE VERIFIED AND COORDINATED WITH THE GENERAL CONTRACTOR AND ALL INVOLVED SUBCONTRACTORS BEFORE INSTALLING THE MECHANICAL EQUIPMENT.
2. WHERE SPACE IS LIMITED, SUCH AS IN FURRED CEILING SPACES AND CHASES, ROUTES AND CLEARANCES AND INSTALLATION PROCEDURES FOR DUCTWORK, PIPING, VALVES, AND OTHER MECHANICAL EQUIPMENT SHALL BE VERIFIED AND COORDINATED WITH OTHER WORK BEFORE EQUIPMENT IS INSTALLED.
3. ALL STRUCTURAL STEEL AND OTHER MATERIALS REQUIRED FOR OVERHEAD–SUSPENDED MECHANICAL EQUIPMENT SHALL BE PROVIDED BY MECHANICAL CONTRACTOR UNLESS DETAILED ON STRUCTURAL DRAWINGS. ALL NECESSARY REINFORCING IN BUILDING STRUCTURE SHALL BE PROVIDED BY GENERAL CONTRACTOR.
4. GRILLE AND OTHER EQUIPMENT MOUNTING HEIGHTS WHERE SHOWN ON DRAWINGS ARE MEASURED FROM FINISHED FLOOR TO BOTTOM EDGE OF OPENING UNLESS OTHERWISE INDICATED.
5. MOUNT WALL SENSORS WITH SETPOINT ADJUSTMENT 5'–0" ABOVE FINISHED FLOOR.
6. IF ANY EQUIPMENT OTHER THAN THAT SHOWN OR SPECIFIED IS FURNISHED, THE CONTRACTOR SHALL VERIFY THAT THE EQUIPMENT CAN BE INSTALLED IN THE SPACE AVAILABLE, INCLUDING PASSAGE THROUGH DOORS AND ACCESS DOORS AND ACCESS TO THOSE PARTS OF THE EQUIPMENT REQUIRING SERVICE.
7. ALL DUCTWORK AND PIPING SHALL BE LOCATED ABOVE NEW OR EXISTING CEILING UNLESS NOTED OTHERWISE.
8. MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL BE 5 FEET.
9. RUN CONDENSATE LINE FROM DRAINS ON AIR HANDLING UNITS AS INDICATED ON DRAWINGS. DRAINS SHALL BE SAME SIZE AS TAPPING ON UNIT EXCEPT NOT SMALLER THAN 1"ø.
10. WHERE EXTERNAL INSULATION IS SHOWN ON DUCTS CONTAINING INTERNAL INSULATION, THE THICKNESS OF THE EXTERNAL INSULATION MAY BE REDUCED BY THE THICKNESS OF THE INTERNAL INSULATION.
11. ALL INTERNAL INSULATION IN DUCTWORK SHALL BE PROTECTED AT UPSTREAM AND DOWNSTREAM EDGES BY MITERED OFFSETS IN DUCT. OFFSETS SHALL BE SAME AS THICKNESS OF INSULATION.
12. SEE SPECIFICATIONS FOR DESCRIPTION OF DUCTWORK INSULATION.
13. ALL AIR INTAKE AND DISCHARGE LOUVERS TO EXTERIOR WALLS OF THE BUILDING SHALL BE FURNISHED BY MECHANICAL CONTRACTOR.
14. ALL DUCTWORK SHOWN LINED SHALL HAVE 1/2" INTERNAL INSULATION. SEE SPECIFICATIONS.
15. OFFSET DUCTS AND PIPING WHERE NECESSARY TO CLEAR OTHER WORK SUCH AS BEAMS, PIPES, ELECTRICAL EQUIPMENT, ETC., COORDINATE DUCTWORK INSTALLATION WITH OTHER TRADES TO AVOID SPACE CONFLICTS.
16. ALL CEILING–MOUNTED DIFFUSERS AND GRILLES IN FURRED CEILING SHALL BE SYMMETRICALLY LOCATED WITH RESPECT TO LIGHTING FIXTURES. DO NOT SCALE DRAWINGS FOR LOCATIONS. COORDINATE EXACT LOCATIONS WITH ELECTRICAL CONTRACTOR AND REFER TO REFLECTED CEILING PLAN.
17. DUCT SIZES SHOWN ON PLANS INDICATE CLEAR INSIDE DIMENSIONS OF DUCTS, NOT INCLUDING ALLOWANCE FOR INTERNAL INSULATION.
18. WHERE ANY PART OF BUILDING IS CUT OR OTHERWISE DISFIGURED TO PERMIT INSTALLATION OF NEW EQUIPMENT, THIS PART OF BUILDING SHALL BE REPAIRED OR REPLACED TO MATCH EXISTING.
19. PROVIDE AND INSTALL ACCESS DOORS IN DRYWALL TO MATCH EXISTING FOR ACCESS TO ALL BALANCING DAMPERS AND NEW OR RELOCATED EQUIPMENT.
20. AIR–BALANCE REPORT SHALL ACCOMPANY A SET OF AS–BUILT PLANS INDICATING EXACT TO–SCALE LOCATIONS AND FINAL BALANCE AIR RATES. MAINTAIN A MINIMUM OF ONE INTACT SET OF PROJECT PLANS AND SPECIFICATIONS AT JOB SITE MARKED TO SHOW ALL DEVIATIONS PERMITTED DURING CONSTRUCTION AS THE WORK IS INSTALLED. ALL MARKS SHALL BE RED IN COLOR, COMPLETE, CLEAR AND LEGIBLE.

HVAC SPECIFICATIONS

1.0 GENERAL

1.01 THE CONTRACT DOCUMENTS APPLY TO THESE SPECIFICATIONS.

1.02 PROVIDE ALL NECESSARY LABOR AND MATERIALS FOR THE WORK SHOWN ON THE DRAWINGS, WHICH INCLUDES REMOVAL OF EQUIPMENT AND COMPONENTS TO BE REMOVED AS WELL AS INSTALLATION OF HVAC SYSTEMS.

1.03 WORK SHALL MEET REQUIREMENTS OF LOCAL BUILDING CODES AND ORDINANCES, APPLICABLE REQUIREMENTS OF THE VUSBC AND NFPA.

1.04 SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

A. GRILLES, REGISTERS & DIFFUSERS
B. HEATING AND AIR CONDITIONING EQUIPMENT
C. INSULATION

1.05 PLACING IN SERVICE:

A. BEFORE BEING PLACED INTO OPERATION, ALL EQUIPMENT REQUIRING PREOPERATIONAL ATTENTION SHALL BE SERVICED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE SPECIFICATIONS AND THE MANUFACTURER'S RECOMMENDATIONS.

B. THIS SERVICING SHALL INCLUDE LUBRICATION, CONTROL CALIBRATIONS AND ADJUSTMENTS, AND TESTING AND ADJUSTING OF OPERATING CONTROLS.

C. AT THE COMPLETION OF PERFORMANCE TEST AND FOLLOWING APPROVAL OF TEST RESULTS, THE CONTRACTOR SHALL RECHECK ALL EQUIPMENT AND VERIFY THAT EACH ITEM IS FUNCTIONING CORRECTLY.

D. FURNISH ALL NECESSARY EQUIPMENT AND ASSUME ALL COSTS INVOLVED TO PERFORM ALL TESTING, CLEANING, AND BALANCING OPERATIONS REQUIRED.

E. TEST, ADJUST AND BALANCE ALL SYSTEMS UNTIL DESIGN FUNCTION AND OPERATION ARE ACHIEVED. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF AN INDEPENDENT CONTRACTOR WHO SPECIALIZES IN THE PRACTICE OF TESTING, ADJUSTING AND BALANCING MECHANICAL EQUIPMENT AND SYSTEMS.

2.0 PRODUCTS

2.01 DUCTWORK:

A. DUCT SYSTEMS SHALL BE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS, THE NATIONAL FIRE PROTECTION ASSOCIATION AND MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE.

B. SYSTEMS AND MATERIALS: LOW VELOCITY A/C (GENERAL USE) GALVANIZED STEEL.

C. FITTINGS FOR ALL DUCT SYSTEMS SHALL BE OF THE SAME MATERIAL AS THE DUCT.

D. MATERIALS: GALVANIZED STEEL SHALL MEET REQUIREMENTS OF ASTM A–527, "STEEL SHEET, ZINC COATED BY THE HOT–DIP PROCESS, LOC–FORMING QUALITY." MANUAL DAMPER OPERATORS SHALL BE LOCKING TYPE AS MANUFACTURED BY VENTFABRICS, INC. OR YOUNG REGULATOR COMPANY.

E. FLEXIBLE AIR DUCT SHALL BE FLEXMASTER TYPE 8M INSULATED FLEXIBLE DUCT. THE COMPLETE DUCT SHALL CONFORM TO NFPA 90A AND BE LISTED BY UNDERWRITER'S LABORATORIES AS 181 CLASS 1 AIR DUCT.

F. JOINT AND SEAM SEALANTS SHALL BE UL CLASSIFIED WITH A FLAME–SPREAD RATING OF 25 OR LESS AND SMOKE–DEVELOPMENT RATING OF 50 OR LESS WHEN APPLIED TO GALVANIZED STEEL.

G. ALL NECESSARY ALLOWANCES AND PROVISIONS SHALL BE MADE FOR BEAMS, CONDUITS, PIPING AND OTHER OBSTRUCTIONS OF THE BUILDING. WHERE NECESSARY TO AVOID OBSTRUCTIONS, THE DUCTS SHALL BE TRANSFORMED, OFFSET, RAISED OR LOWERED WITH THE REQUIRED FREE AREA BEING MAINTAINED.

H. PROVIDE FLEXIBLE CONNECTIONS BETWEEN THE HVAC UNITS AND SHEET METAL DUCTWORK.

2.02 PIPE AND PIPE FITTINGS

A. COPPER TUBE TYPE ACR: ASTM B280.

B. PVC PIPE: SCH. 40, GRADE PVC 2116: ASTM D1785 AND ASTM D2241.

2.03 PIPING SYSTEM SHALL BE SUPPORTED IN ACCORDANCE WITH ANSI B31.1 "POWER PIPING" SO AS TO MAINTAIN REQUIRED PITCH OF LINES, PREVENT VIBRATION AND PROVIDE FOR EXPANSION AND CONTRACTION MOVEMENT.

2.04 PIPING SCHEDULE

SERVICE	SIZE	PIPE TYPE	FITTING TYPE	VALVE TYPE	VALVE MFG & NO
CONDENSATE DRAINS	ALL SIZES	SCH. 40 PVC			
REFRIGERANT	ALL SIZES	TYPE ACR CLEANED AND CAPPED	WROUGHT COPPER BRAZE		

2.05 INSULATION SCHEDULE

SERVICE	TYPE INSUL.	THICKNESS INCHES	FINISH IN CNCL. AREAS	FINISH IN FNSH AREAS	NOTES
(1) PIPING					
CONDENSATE	GLASS FIBER	1.0	INTEGRAL FIRE RETARDANT VAPOR BARRIER JACKET		
REFRIGERANT LOW TEMP, ALL SIZES	FLEXIBLE ELASTOMERIC	0.75	NONE	TWO COATS ARMAFLEX FINISH	
(2) DUCTWORK					
A/C SUPPLY, RETURN & OUTSIDE AIR	FLEXIBLE GLASS FIBER	1.5	FSK VAPOR BARRIER JACKET	LINE INTERNALLY WITH JOHNS MANVILLE SPIRACOUSTIC DUCT LINER FOR SPIRAL DUCT	1, 2

NOTES:

1. APPLY FLEXIBLE GLASS FIBER INSULATION IN CONCEALED AREAS ONLY.
2. APPLY RIGID INSULATION AT LOCATIONS WHERE DUCTS ARE SUPPORTED FROM BELOW.

3.0 EXECUTION

3.01 TEST FIELD–ASSEMBLED REFRIGERANT PIPING AND APPARATUS FOR ONE HOUR WITH DRY CARBON DIOXIDE OR NITROGEN, PLUS A SMALL AMOUNT OF REFRIGERANT. TEST PRESSURES SHALL BE IN ACCORDANCE WITH THE AMERICAN STANDARD SAFETY CODE FOR MECHANICAL REFRIGERATION.

3.02 DUCT SYSTEMS SHALL BE BALANCED TO PROVIDE AIR QUANTITIES WITHIN TEN (10) PERCENT OF SPECIFIED REQUIREMENTS. FOR OUTLETS LESS THAN 75 CFM, THE TOLERANCE SHALL BE +/– TWENTY (20) PERCENT, UNLESS OTHERWISE NOTED.

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Project Title
COUNTY OF MADISON, VIRGINIA
410 NORTH MAIN STREET
MADISON, VA 22727

Drawing Title
MECHANICAL
LEGEND, NOTES & SPECIFICATIONS

Scale

Drawing No.
M001
of

BUILDING 410 SCHEDULES

AIR DISTRIBUTION SCHEDULE

MARK	MODEL	NECK SIZE	MOUNTING	MATERIAL	COLOR	MAX NC	REMARKS
CD	SCDA	SEE PLANS	LAY-IN	STEEL	OFF-WHITE	# 30	1, 2
RG-1	PDR	22 X 22	LAY-IN	STEEL	OFF-WHITE	30	1, 2

REMARKS:
1. MODEL NUMBER BASED ON PRICE INDUSTRIES.
2. PROVIDE BORDER TRIM SUITABLE FOR TEGULAR CEILING WHERE REQUIRED. COORDINATE WITH ARCHITECTURAL CEILING PLANS.

FAN SCHEDULE

MARK	MODEL	CFM	SP in Wg	WATTS/HP	SONES	DRIVE	V/Ph/Hz	REMARKS
EF-1	SP-B150	150	0.25	128W	3	DIRECT	115/1/60	1, 2
EF-2	SP-B150	150	0.25	128W	3	DIRECT	115/1/60	1, 2

REMARKS:
1. MODEL NUMBER BASED ON GREENHECK.
2. PROVIDE WITH SOLID STATE SPEED CONTROL FOR AIR FLOW ADJUSTMENT CONCEALED ABOVE CEILING ADJACENT TO FAN POWER SUPPLY.

MISCELLANEOUS EQUIPMENT SCHEDULE

MARK	DESCRIPTION
AHU/HP-1	SPLIT SYSTEM HEAT PUMP - TRANE MODEL GAM5B0A24M21SB INDOOR FAN COIL AIR HANDLING UNIT SUITABLE FOR HORIZONTAL AIR FLOW CONFIGURATION WITH TRANE MODEL 4TWB4024G1000B OUTDOOR HEAT PUMP. INDOOR UNIT SHALL HAVE NOMINAL AIR FLOW CAPACITY OF 800 CFM AT 0.3 INWG STATIC PRESSURE AND 7.68 KW ELECTRIC BACKUP HEAT. SYSTEM SHALL HAVE NOMINAL CAPACITY OF 2 TONS COOLING AT 80DEG F DB/68DEG F WB ENTERING AIR CONDITIONS. PROVIDE WITH PROGRAMMABLE WALL MOUNTED INDOOR THERMOSTAT FOR SYSTEM CONTROL AND TO ENERGIZE AND OPEN OUTSIDE AIR DAMPER WHEN IN OCCUPIED MODE. SYSTEM SHALL HAVE 240V/1PH/60HZ ELECTRICAL POWER SERVICE CHARACTERISTICS. PROVIDE MERV 13 FILTER.
AHU/HP-2	SPLIT SYSTEM HEAT PUMP - TRANE MODEL GAM5B0A24M21SB INDOOR FAN COIL AIR HANDLING UNIT SUITABLE FOR HORIZONTAL AIR FLOW CONFIGURATION WITH TRANE MODEL 4TWB4024G1000B OUTDOOR HEAT PUMP. INDOOR UNIT SHALL HAVE NOMINAL AIR FLOW CAPACITY OF 800 CFM AT 0.3 INWG STATIC PRESSURE AND 7.68 KW ELECTRIC BACKUP HEAT. SYSTEM SHALL HAVE NOMINAL CAPACITY OF 2 TONS COOLING AT 80DEG F DB/68DEG F WB ENTERING AIR CONDITIONS. PROVIDE WITH PROGRAMMABLE WALL MOUNTED INDOOR THERMOSTAT FOR SYSTEM CONTROL AND TO ENERGIZE AND OPEN OUTSIDE AIR DAMPER WHEN IN OCCUPIED MODE. SYSTEM SHALL HAVE 240V/1PH/60HZ ELECTRICAL POWER SERVICE CHARACTERISTICS. PROVIDE MERV 13 FILTER.

CALCULATED HVAC LOADS FOR SYSTEMS SERVING BUILDING 410

AIR SYSTEM NUMBER	SUPPLY AIR FLOW RATE (CFM)	OCCUPIED OA AIR FLOW RATE (CFM)	SENSIBLE COOLING LOAD (BTUH)	LATENT COOLING LOAD (BTUH)	TOTAL COOLING LOAD (BTUH)	HEATING LOAD (BTUH)
AHU/HP-1	800	131	17,451	5,316	22,767	19,620
AHU/HP-2	800	136	13,216	4,910	18,126	16,701
AHU/HP-3 (ETR - REBALANCE PER PLANS)	1950	450	22,774	15,298	38,072	36,977
AHU/HP-4 (ETR - REBALANCE PER PLANS)	1550	137	15,648	5,326	20,974	17,962

CALCULATION TABLE NOTES:
1. CALCULATIONS IN ACCORDANCE WITH 2015 VIRGINIA CONSTRUCTION CODE (VUSBC/IBC/IMC/IECC)
2. CALCULATIONS BASED ON CLIMATIC WEATHER DATA FOR STERLING, VIRGINIA, USA AND FOR 72°F HEATING AND 75°F COOLING DESIGN TEMPERATURES.

BUILDING 414 SCHEDULES

AIR DISTRIBUTION SCHEDULE

MARK	MODEL	NECK SIZE	MOUNTING	MATERIAL	COLOR	MAX NC	REMARKS
CD	SCDA	SEE PLANS	LAY-IN	STEEL	OFF-WHITE	# 30	1, 2
RG-1	PDR	22 X 22	LAY-IN	STEEL	OFF-WHITE	30	1, 2

REMARKS:
1. MODEL NUMBER BASED ON PRICE INDUSTRIES.
2. PROVIDE BORDER TRIM SUITABLE FOR TEGULAR CEILING WHERE REQUIRED. COORDINATE WITH ARCHITECTURAL CEILING PLANS.

FAN SCHEDULE

MARK	MODEL	CFM	SP in Wg	WATTS/HP	SONES	DRIVE	V/Ph/Hz	REMARKS
EF-1	SP-B110	100	0.25	80W	1.5	DIRECT	115/1/60	1, 2
EF-2	SP-B110	100	0.25	80W	1.5	DIRECT	115/1/60	1, 2

REMARKS:
1. MODEL NUMBER BASED ON GREENHECK.
2. PROVIDE WITH SOLID STATE SPEED CONTROL FOR AIR FLOW ADJUSTMENT CONCEALED ABOVE CEILING ADJACENT TO FAN POWER SUPPLY.

MISCELLANEOUS EQUIPMENT SCHEDULE

MARK	DESCRIPTION
AHU/HP-2	SPLIT SYSTEM HEAT PUMP - TRANE MODEL GAM5B0C60M51EA INDOOR FAN COIL AIR HANDLING UNIT SUITABLE FOR HORIZONTAL AIR FLOW CONFIGURATION WITH TRANE MODEL 4TWB4061E1000C OUTDOOR HEAT PUMP. INDOOR UNIT SHALL HAVE NOMINAL AIR FLOW CAPACITY OF 1790 CFM AT 0.3 INWG STATIC PRESSURE AND 7.2 KW ELECTRIC BACKUP HEAT. SYSTEM SHALL HAVE NOINAL CAPACITY OF 5 TONS COOLING AT 80DEG F DB/68DEG F WB ENTERING AIR CONDITIONS. PROVIDE WITH PROGRAMMABLE WALL MOUNTED INDOOR THERMOSTAT FOR SYSTEM CONTROL AND TO ENERGIZE AND OPEN OUTSIDE AIR DAMPER WHEN IN OCCUPIED MODE. SYSTEM SHALL HAVE 208V/3PH/60HZ ELECTRICAL POWER SERVICE CHARACTERISTICS. PROVIDE MERV 13 FILTER.
AHU/HP-3	SPLIT SYSTEM HEAT PUMP - TRANE MODEL GAM5B0A24M21SB INDOOR FAN COIL AIR HANDLING UNIT SUITABLE FOR HORIZONTAL AIR FLOW CONFIGURATION WITH TRANE MODEL 4TWB4024G1000B OUTDOOR HEAT PUMP. INDOOR UNIT SHALL HAVE NOMINAL AIR FLOW CAPACITY OF 800 CFM AT 0.3 INWG STATIC PRESSURE AND 7.68 KW ELECTRIC BACKUP HEAT. SYSTEM SHALL HAVE NOINAL CAPACITY OF 2 TONS COOLING AT 80DEG F DB/68DEG F WB ENTERING AIR CONDITIONS. PROVIDE WITH PROGRAMMABLE WALL MOUNTED INDOOR THERMOSTAT FOR SYSTEM CONTROL AND TO ENERGIZE AND OPEN OUTSIDE AIR DAMPER WHEN IN OCCUPIED MODE. SYSTEM SHALL HAVE 208V/1PH/60HZ ELECTRICAL POWER SERVICE CHARACTERISTICS. PROVIDE MERV 13 FILTER.
AHU/HP-4	SPLIT SYSTEM HEAT PUMP - TRANE MODEL GAM5B0A24M21SB INDOOR FAN COIL AIR HANDLING UNIT SUITABLE FOR HORIZONTAL AIR FLOW CONFIGURATION WITH TRANE MODEL 4TWB4024G1000B OUTDOOR HEAT PUMP. INDOOR UNIT SHALL HAVE NOMINAL AIR FLOW CAPACITY OF 800 CFM AT 0.3 INWG STATIC PRESSURE AND 7.2 KW ELECTRIC BACKUP HEAT. SYSTEM SHALL HAVE NOINAL CAPACITY OF 2 TONS COOLING AT 80DEG F DB/68DEG F WB ENTERING AIR CONDITIONS. PROVIDE WITH PROGRAMMABLE WALL MOUNTED INDOOR THERMOSTAT FOR SYSTEM CONTROL AND TO ENERGIZE AND OPEN OUTSIDE AIR DAMPER WHEN IN OCCUPIED MODE. SYSTEM SHALL HAVE 208V/1PH/60HZ ELECTRICAL POWER SERVICE CHARACTERISTICS. PROVIDE MERV 13 FILTER.

CALCULATED HVAC LOADS FOR SYSTEMS SERVING BUILDING 414

AIR SYSTEM NUMBER	SUPPLY AIR FLOW RATE (CFM)	OCCUPIED OA AIR FLOW RATE (CFM)	SENSIBLE COOLING LOAD (BTUH)	LATENT COOLING LOAD (BTUH)	TOTAL COOLING LOAD (BTUH)	HEATING LOAD (BTUH)
AHU/HP-1	NA	NA	NA	NA	NA	NA
AHU/HP-2 (REPLACEMENT IN LIKE KIND)	NA	NA	NA	NA	NA	NA
AHU/HP-3	800	200	17,527	6,177	23,704	32,552
AHU/HP-4	800	137	16,389	6,643	23,033	19,692
AHU/HP-5 (ETR - REBALANCE PER PLANS)	800	68	12,109	2,757	14,866	18,535
AHU/HP-6 (ETR - REBALANCE PER PLANS)	800	55	10,480	2,265	12,745	18,629

CALCULATION TABLE NOTES:
1. CALCULATIONS IN ACCORDANCE WITH 2015 VIRGINIA CONSTRUCTION CODE (VUSBC/IBC/IMC/IECC)
2. CALCULATIONS BASED ON CLIMATIC WEATHER DATA FOR STERLING, VIRGINIA, USA AND FOR 72°F HEATING AND 75°F COOLING DESIGN TEMPERATURES.

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Project Title: COUNTY OF MADISON, VIRGINIA
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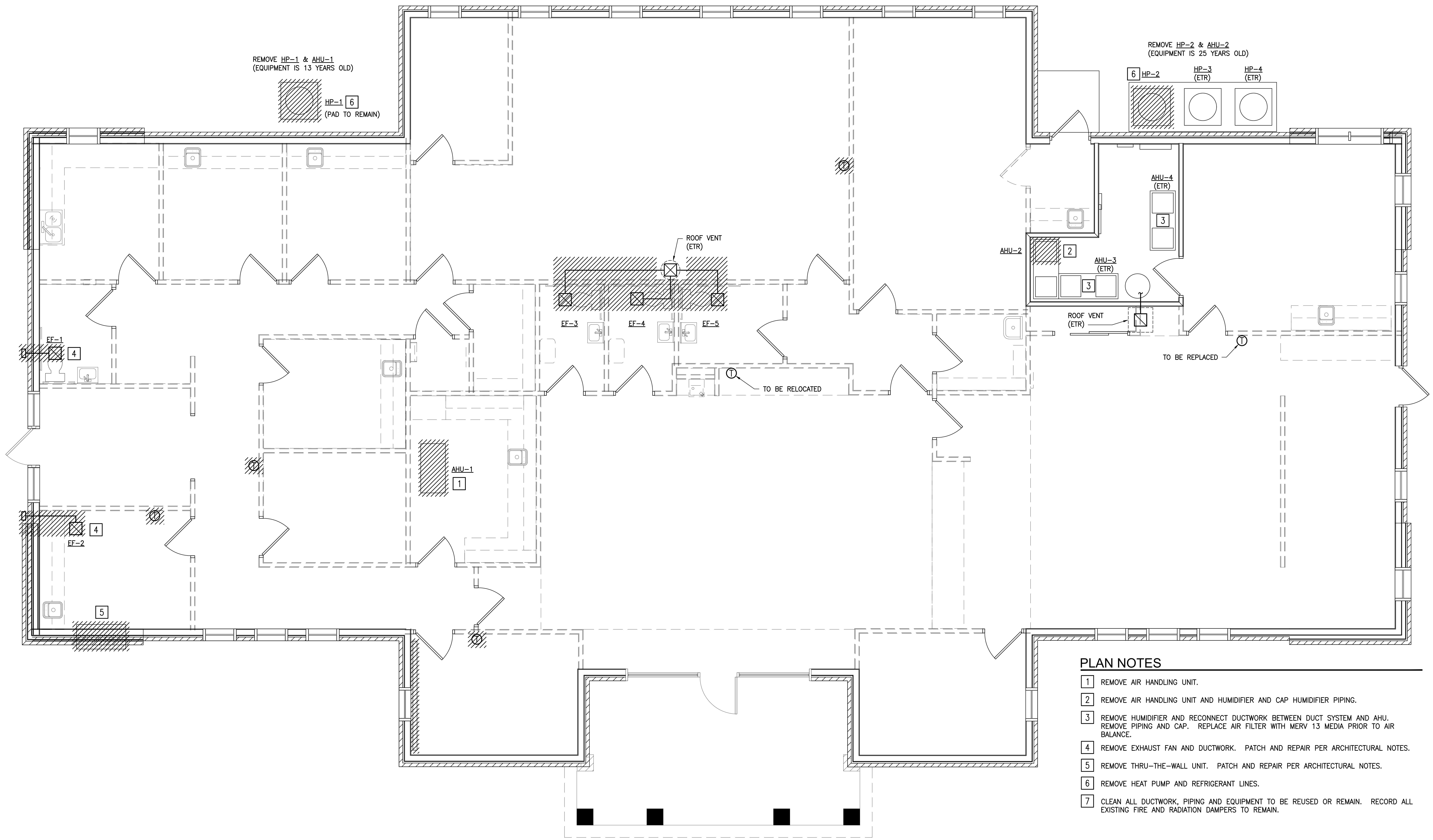
Drawing Title: MECHANICAL EQUIPMENT SCHEDULES

Scale:

Drawing No. M002

of



BUILDING 410 MECHANICAL DEMOLITION PLAN 7

SCALE: 1/4"=1'-0"

PLAN NOTES

1. REMOVE AIR HANDLING UNIT.
2. REMOVE AIR HANDLING UNIT AND HUMIDIFIER AND CAP HUMIDIFIER PIPING.
3. REMOVE HUMIDIFIER AND RECONNECT DUCTWORK BETWEEN DUCT SYSTEM AND AHU. REMOVE PIPING AND CAP. REPLACE AIR FILTER WITH MERV 13 MEDIA PRIOR TO AIR BALANCE.
4. REMOVE EXHAUST FAN AND DUCTWORK. PATCH AND REPAIR PER ARCHITECTURAL NOTES.
5. REMOVE THRU-THE-WALL UNIT. PATCH AND REPAIR PER ARCHITECTURAL NOTES.
6. REMOVE HEAT PUMP AND REFRIGERANT LINES.
7. CLEAN ALL DUCTWORK, PIPING AND EQUIPMENT TO BE REUSED OR REMAIN. RECORD ALL EXISTING FIRE AND RADIATION DAMPERS TO REMAIN.

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MADISON, VA 22727

Drawing Title
BUILDING 410
MECHANICAL
DEMOLITION PLAN

Scale

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M101
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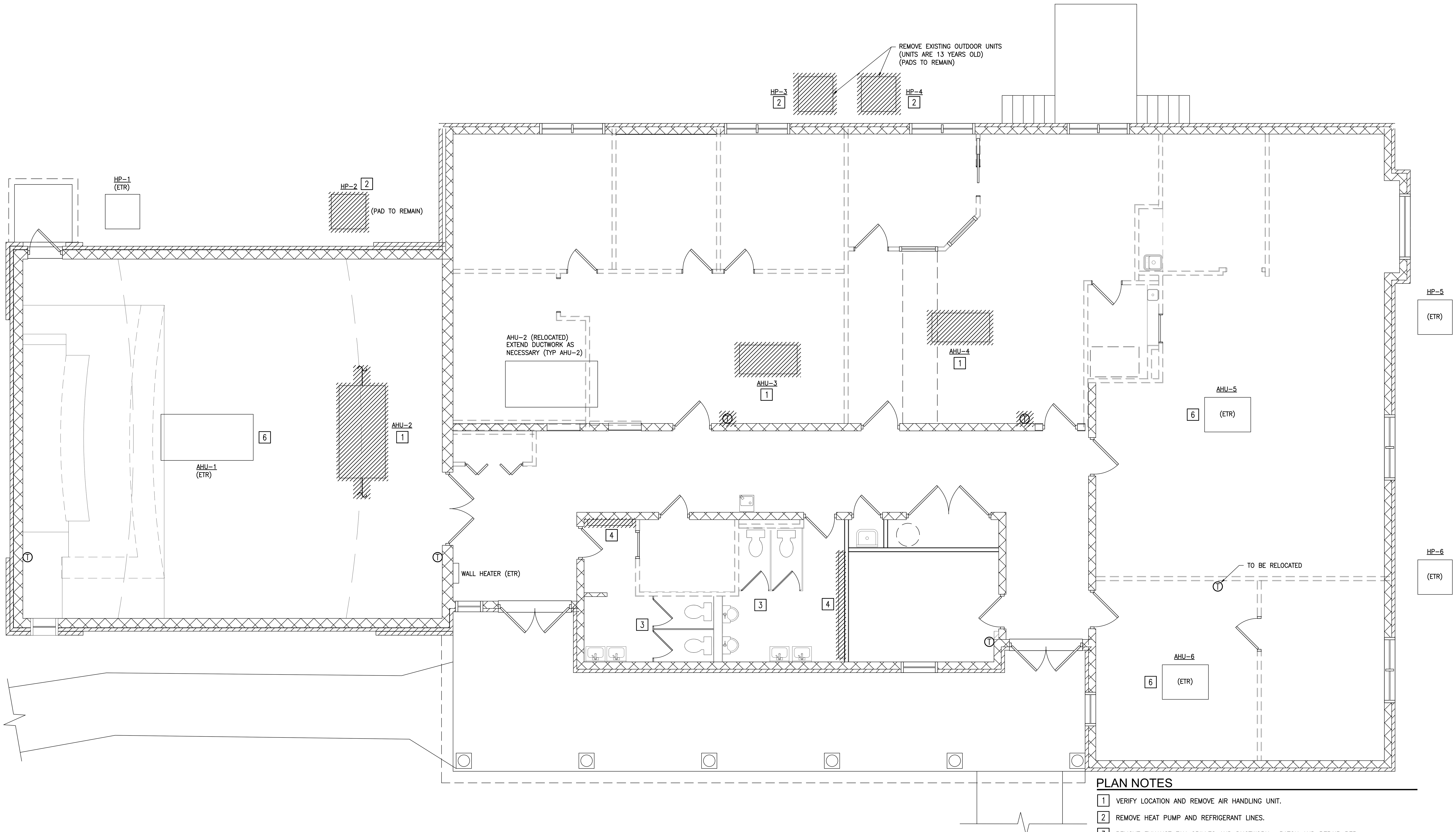

BUILDING 414 MECHANICAL DEMOLITION PLAN

SCALE: 1/4"=1'-0"

PLAN NOTES

1. VERIFY LOCATION AND REMOVE AIR HANDLING UNIT.
2. REMOVE HEAT PUMP AND REFRIGERANT LINES.
3. REMOVE EXHAUST FAN GRILLES AND DUCTWORK. PATCH AND REPAIR PER ARCHITECTURAL NOTES.
4. REMOVE ELECTRIC BASEBOARD. PATCH AND REPAIR PER ARCHITECTURAL NOTES.
5. CLEAN ALL DUCTWORK, PIPING AND EQUIPMENT TO BE REUSED OR REMAIN.
6. REPLACE AIR FILTER WITH MERV 13 MEDIA PRIOR TO AIR BALANCE.

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Consultant
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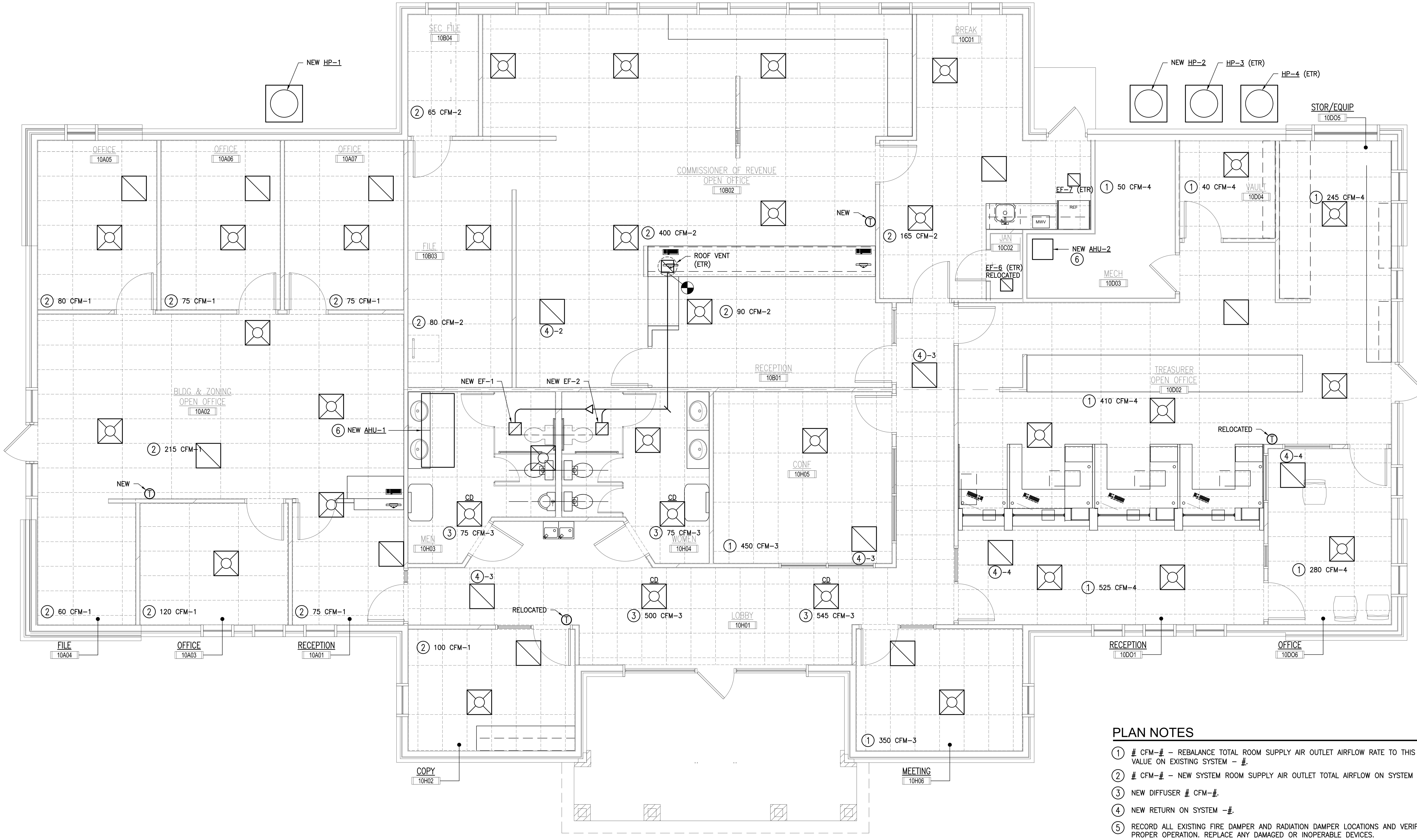
Project Title
COUNTY OF MADISON, VIRGINIA
410 NORTH MAIN STREET
MADISON, VA 22727

Drawing Title
BUILDING 414
MECHANICAL
DEMOLITION PLAN

Scale

Drawing No.
M102
of



PLAN NOTES

1. # CFM-# – REBALANCE TOTAL ROOM SUPPLY AIR OUTLET AIRFLOW RATE TO THIS VALUE ON EXISTING SYSTEM – #.
2. # CFM-# – NEW SYSTEM ROOM SUPPLY AIR OUTLET TOTAL AIRFLOW ON SYSTEM – #.
3. NEW DIFFUSER # CFM-#.
4. NEW RETURN ON SYSTEM -#.
5. RECORD ALL EXISTING FIRE DAMPER AND RADIATION DAMPER LOCATIONS AND VERIFY PROPER OPERATION. REPLACE ANY DAMAGED OR INOPERABLE DEVICES.
6. ROUTE REFRIGERANT AND CONDENSATE DRAIN PIPING AS BEFORE.

NORTH

BUILDING 410 MECHANICAL NEW WORK PLAN (5)

SCALE: 1/4"=1'-0"

PROGRESS PRINT. NOT FOR CONSTRUCTION 8/4/20

No.	Date	Issue Notes
6	.	.
5	073120	Client/BOS Review
4	071720	AE Progress
3	070820	AE Progress
2	062520	AE Progress
1	060320	DD Progress

No.	Date	Revision Notes	Zone	Appr

Designed By: CLS
Drawn By: ATE
Checked By: CLS
Reviewed By: CLS
Submitted By:
Project Manager:

Date: 073120
Revision: Revision
Project ID: 19679
Drawing Code: Drawing Code
CAD File Name: 19679-sd-main-rz-051320
Plot Date: 2020/08/04

Design Firm: Norman Smith Architecture
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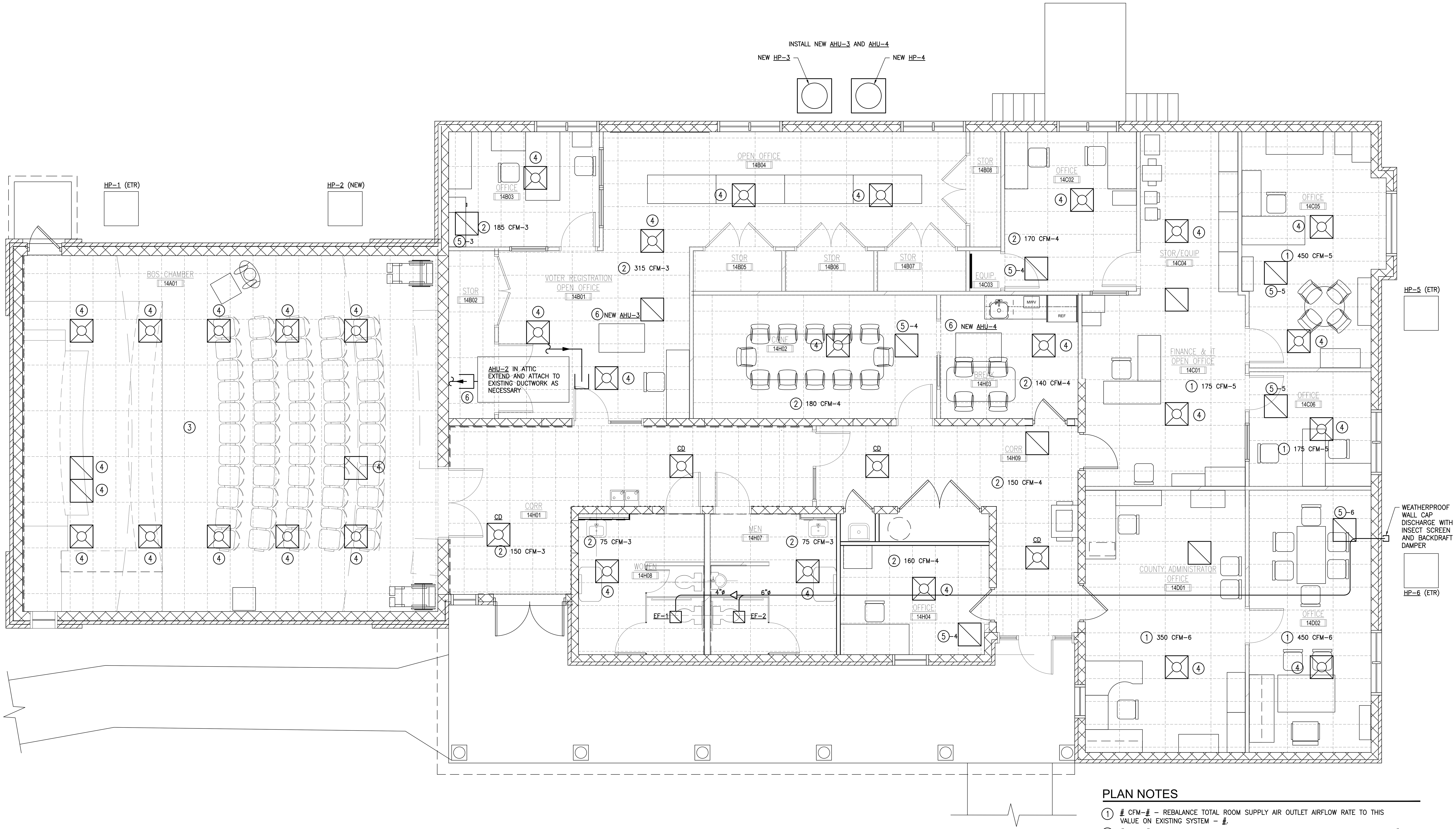
Project Title: COUNTY OF MADISON, VIRGINIA
410 NORTH MAIN STREET
MADISON, VA 22727

Drawing Title: BUILDING 410 MECHANICAL NEW WORK PLAN

Scale:

Drawing No. M201 of



BUILDING 414 MECHANICAL NEW WORK PLAN

SCALE: 1/4"=1'-0"

NORTH

PLAN NOTES

1. # CFM-# – REBALANCE TOTAL ROOM SUPPLY AIR OUTLET AIRFLOW RATE TO THIS VALUE ON EXISTING SYSTEM – #.
2. # CFM-# – NEW SYSTEM ROOM SUPPLY AIR OUTLET TOTAL AIRFLOW ON SYSTEM – #.
3. EXISTING AIR FLOW TO THIS ROOM SHALL REMAIN AS IS. MEASURE AND RECORD EXISTING AND RESTORE TO ORIGINAL AFTER CONSTRUCTION IS COMPLETE.
4. RELOCATE EXISTING AIR INLET/OUTLET TO THIS LOCATION EXTEND DUCTWORK AND REROUTE AS NECESSARY.
5. NEW RETURN ON SYSTEM –#.
6. ROUTE REFRIGERANT AND CONDENSATE DRAIN PIPING AS BEFORE.
7. PROVIDE A WOOD-FRAMED PLATFORM FOR THE RELOCATED UNIT USING 3/4" CDX PLYWOOD OVER 2X8 JOISTS @ 16" O.C. (MAX SPAN 10'-0") BEARING ON EXISTING CMU WALL BELOW VIA CRIPPLE STUD WALL OR ON TRUSS MEMBERS BEARING ON SAME AND ON BOTTOM TRUSS CORD BEARING AT NORTH END THROUGH A DOUBLE PLATE SPANNING ACROSS THE TRUSS CORD.

PROGRESS PRINT. NOT FOR CONSTRUCTION 8/4/20

No.	Date	Issue Notes
6	.	.
5	073120	Client/BOS Review
4	071720	AE Progress
3	070820	AE Progress
2	062520	AE Progress
1	060320	DD Progress

No.	Date	Revision Notes	Zone	Appr

Designed By	CLS
Drawn By	ATE
Checked By	CLS
Reviewed By	CLS
Submitted By	
Project Manager	
Date	073120
Revision	Revision
Project ID	19679
Drawing Code	Drawing Code
CAD File Name	19679-sd-main-rz-051320
Plot Date	2020/08/04

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Drawing Title
BUILDING 414
MECHANICAL
NEW WORK PLAN

Scale

Drawing No.
M202
of